

Monthly Vital Statistics

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Missouri Urban Firearm Deaths and Injuries, 1994

A cooperative agreement with the Centers for Disease Control and Prevention enabled the Office of Injury Control, Missouri Department of Health, to examine the feasibility of developing a linked-file surveillance system to monitor firearm-related injuries, both fatal and nonfatal. Police reports of firearm incidents from the Kansas City, St. Louis City, and St. Louis County police agencies, mortality data on deaths due to firearms in the two metro areas, and patient abstract system data on firearm injuries from hospitals in the two metro areas were linked to produce the data described in this paper. The project was limited to the two urban areas of the state because of the relatively low number of firearm injuries in the rural areas and the difficulty of obtaining data from the large number of law enforcement agencies statewide. State law (Revised Missouri Statute 578, §350) requires medical personnel to report firearm injuries to local law enforcement agencies; nevertheless, unintentional injuries and suicides were excluded from the dataset due to the low level of reporting to law enforcement. All data relate to injuries and deaths occurring in 1994.

Use of the police data, patient abstract system data, and mortality data identified a total of 2710 Missouri residents who were killed, hospitalized, or treated in emergency rooms in Kansas City, St. Louis, or St. Louis County for firearm injuries in 1994 (Table 1). In addition to the 1688 linked records, the dataset contains 70 unlinked firearm-related mortality records, 209 unlinked records of firearm injuries treated as inpatients, and 144 unlinked records of firearm injuries treated as outpatients. The 599 unlinked police records of firearm injuries includes 29 reported homicides and 570 for which the level of treatment was not reported. The linkage rate for the St. Louis City injuries was 74 percent of total reported injuries, as compared with 51 percent for St. Louis County and 44 percent for Kansas City.

The police agencies reported the type of offense in various formats, some more detailed than others. Combining the incidents into offense categories resulted in 1837 (68 percent) of the 2710 total incidents being recorded as assaults or aggravated assaults, 329 (12 percent) as homicide or manslaughter, and 121 (4 percent) as robbery or burglary. (In incidents where more than one offense was listed, this tabulation includes only the first listed.)

Persons injured with firearms were predominantly young, African-American, and male. A total of 2,006 (74 percent) were within the age range 15-34 years, and 2,480 (92 percent) were within the range 5-44 years. Eighty-four percent of the victims were male, and 84 percent were African-American. Injury rates (per 100,000 population) for residents in these jurisdictions were 465 for black as compared to 21 for white, and 230 for male as compared to 39 for female.

Selection of shooting incidents for inclusion in this dataset used information on type and use of firearm, type of incident, and circumstances of the incident. However, the high degree of variation in police reporting made the use of such variables difficult. The type of firearm was indicated in 914 (34 percent) of the records. Of these 914 shootings, handguns were most commonly used (700, 77 percent), followed by shotguns (172, 19 percent) and rifles (42, 5 percent). Caliber or gauge of the firearm was given for only 145 (5 percent) of the incidents.

Sixty-two percent (1418) of the police agency records, all from St. Louis City, included indications of whether the incident appeared to be a driveby shooting or gang-related: 148 (10 percent) of these 1418 records indicated a driveby incident, while 118 (8 percent) indicated gang involvement in the shooting.

The relationship of the victim to the perpetrator was reported in 799 (35 percent) of the police records, all from St. Louis County or City. In 553 (69 percent) of these, according to the police records, the victim was a stranger to the perpetrator. In 208 (26 percent) the victim was a friend or acquaintance of the perpetrator. In 20 (3 percent) the victim was a spouse or paramour, and in 18 (2 percent) the victim and perpetrator were related as sibling, parent, child, or other family member.

Table 2 shows comparative rates of injury related to three types of offense for the three jurisdictions. Rates are calculated for victims who are residents of the three jurisdictions; Jackson County is used rather than Kansas City because hospital records note the county of residence but not city of residence. The total rate for the three offense types for residents of the three jurisdictions was 130 per 100,000 population. The variation in rate among the jurisdictions was high, ranging from 41 per 100,000 population for St. Louis County, to 124 for Jackson County, to 383 for St. Louis City.

All of the police records indicated the premises, or place, of the shooting. Of the 2287 shootings reported by police, the greatest number 1485 (65 percent) occurred on a street, alley, highway, or in (or from) an automobile. Four hundred and three (18 percent) occurred at a

home (single-family residence), while another 183 (8 percent) occurred in an apartment or hotel. Seventy (3 percent) occurred in a park or playground, while 49 (2 percent) were in a retail store or place of business.

Data on sex and race of perpetrators are recorded only on the police records, and are available for 1060 (46 percent) of the shootings represented in the police data. For a small number of the incidents more than one perpetrator was involved but only data on the first perpetrator are reported here. Perpetrators were predominantly African-American and male. Ninety-six percent of the perpetrators whose sex was reported were male, and 92 percent of those whose race was reported were African-American.

Sixty-nine percent (1,360) of the 1982 nonfatal police reports included a judgment of the severity of the injury. Of these, 883 (65 percent) were considered serious and 477 (35 percent) were minor. Another indicator of severity is the level of treatment after the injury. Of the 2,710 persons reported injured, 385 (14 percent) died; 802 (30 percent) were treated as inpatients and did not die; and 953 (35 percent) were treated as outpatients. The remaining 570 records (21 percent) were unlinked police records in which the level of treatment was not reported.

Another measure of seriousness of the injury for those hospitalized is the hospital length of stay. For the 813 hospital inpatient records, 42 (5 percent) stayed less than one day, 323 (40 percent) had a stay of 1-3 days, 325 (40 percent) were in the hospital 4-10 days, and 123 (15 percent) stayed eleven days or more. The mean length of inpatient hospital stay was 6.6 days, with range of less than one day to 142 days.

Table 3 shows location on the body of injuries treated in inpatient or outpatient settings. Of the 1766 persons treated as either inpatients or outpatients, 1745 (99 percent) were coded with an injury as the primary diagnosis, while the remaining 21 were coded with some non-injury code. Injuries to the abdomen made up 25 percent of inpatients but 4 percent of outpatients. Injuries to limbs and to head, neck, and face were treated primarily as outpatients. Fifty-three percent of all the injuries listed involved the limbs (arms, legs, hands, feet). This is similar to the rate for nonfatal firearm assaults reported by the Centers for Disease Control (1993).

The total reported hospital charge for firearm injured inpatients and outpatients was \$16.9 million. Inpatients accounted for \$15.7 million, with a mean of \$19,344; outpatients accounted for slightly less than \$1.2 million, with a mean of \$1248. Over half of these charges were to uninsured patients and another one-quarter were to Medicaid patients.

With regard to the purpose of this project, which was to consider the feasibility of developing an ongoing linked-file firearm injury surveillance system in Missouri, the conclusion was that such a system would be impractical. The difficulty of obtaining records from the large number of law-enforcement agencies is the principal problem. The apparent lack of police agency records of firearm-related suicides and unintentional injuries (despite a statutory requirement that medical personnel report such injuries to law enforcement), and the diversity of data and lack of a core set of data items among the law-enforcement agencies are other serious hurdles. Additionally, much information is unknown unless an arrest is made and a weapon is recovered.

These data, however, reaffirm the importance of injury and death due to illegal firearm use in the urban areas of Missouri, especially to young African-American males. Abuse of firearms and resulting injury results in major cost of life, health, and resources spent for medical care and law enforcement, and must be considered a major public health and safety concern.

References:

Centers for Disease Control and Prevention, National Center for Injury Prevention, Firearms Injury Surveillance Study, June 1992 - May 1993. Reported in Zawitz, MW. Firearm Injury from Crime. Bureau of Justice Statistics Selected Findings, 1966.

Table 1					
Firearm Data by Linkage Status and Source of Data: Missouri Metro Areas 1994					

<i>Linkage Status</i>	<i>Police</i>	<i>Mortality</i>	<i>Inpatient</i>	<i>Outpatient</i>	<i>Total</i>
Linked records*	1688	275	604	809	1688*
Percent linked	73.8	79.7	74.3	84.9	
Police Records not linked	599	-	-	-	599
Mortality Records not linked	-	70	-	-	70
PAS Records not linked	-	-	209	144	353
Total Records in Dataset	2287	345	813	953	2710

*Total linked observations are comprised of 1688 police records each linked to one of 275 mortality records
604 PAS inpatient records or 809 PAS outpatient records.

Table 2

**Firearm Injuries Related to Type of Offense by Geographic Area, Rate per 100,000 Population: Missouri
1994**

<i>Offense</i>	<i>Jackson County</i>	<i>St. Louis County</i>	<i>St. Louis City</i>	<i>Total</i>
Assault	105.9	34.4	316.1	108.7
Robbery	4.3	1.7	19.0	5.7
Homicide	14.2	4.6	47.8	15.5
Total	124.3	40.7	382.9	129.9

Table 3

Location of Injury by Level of Treatment: Missouri Metro Areas 1994

	<i>Inpatient</i>		<i>Outpatient</i>		<i>Total</i>	
<i>Injury Location</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>	<i>Number</i>	<i>Percent</i>
Limbs	346	43	589	62	935	53
Chest, trunk, back	134	16	134	14	268	15
Abdomen	204	25	34	4	238	14
Head, neck, face	94	12	123	13	217	12
Other unspec	19	2	68	7	87	5
Prim diagnosis -injury	16	2	5	1	21	1
Total	813	100	953	100	1766	100

Provisional Vital Statistics for June 1997

Live births decreased in June as 5,486 Missouri infants were born compared with 6,032 one year earlier

Cumulative births for the six months ending with June were virtually the same in 1996 and 1997. The six month birth rate of 13.7 per 1,000 population was the same for back years.

Deaths increased in June as 4,369 Missourians died compared with 4,099 in June 1996. The six month death rate of 10.7 per 1,000 population was the same for 1996 and 1997.

The **Natural increase** for Missouri in June was 1,117 (5,486 births minus 4,369 deaths) compared with 1,933 the previous June. The rate of natural increase in June declined from 4.3 to 2.4 per 1,000 population.

Marriages and dissolutions of marriage both decreased for all three time periods shown in the table below. The marriage to divorce ratio for the 12 months ending with June was 1.71, the same as in 1996.

Infant death increased for all three time periods shown below. The rate for the first half of the year was 8.7 infant deaths per 1,000 live births compared with 7.5 in 1996..

PROVISIONAL RESIDENT VITAL STATISTICS FOR THE STATE OF MISSOURI

June					Jan. June cumulative				12 months ending with June				
Item	Number		Rate*		Number		Rate*		Number		Rate*		
	1996	1997	1996	1997	1996	1997	1996	1997	1996	1997	1995	1996	1997
Live Births	6,032	5,486	13.3	11.6	36,624	36,684	13.7	13.7	73,705	72,603	14.1	13.8	13.5
Deaths	4,099	4,369	9.0	9.2	28,437	28,729	10.7	10.7	54,447	54,385	10.1	10.2	10.1
Natural increase	1,933	1,117	4.3	2.4	8,187	7,955	3.1	3.0	19,258	18,218	4.0	3.6	3.5
Marriages	6,617	5,194	14.6	11.0	21,509	20,144	8.1	7.5	45,737	43,541	8.5	8.6	8.1
Dissolutions	2,514	2,462	5.5	5.2	13,820	12,604	5.2	4.7	26,672	25,492	4.9	5.0	4.7
Infant deaths	32	53	6.1	8.5	274	319	7.5	8.7	523	611	8.1	7.1	8.4
Population base (in thousands)	...	...	5,359	5,395	...	...	5,359	5,395	...	...	5,297	5,137	5,377

*Rates for live births, deaths, natural increase, marriages and dissolutions are computed on the number per 1000 estimated population. The infant death rate is based on the number of infant deaths per 1000 live births. Rates are adjusted to account for varying lengths of monthly reporting periods.

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